Amendments were made to claims to better define what Applicant claims to be the invention. These amendments do not introduce any new matter.

Claim Objections under 37 CFR § 1.75(c):

Citing to 37 CFR § 1.75(c), the Office has objected to claims 4-7, 11-14, and 18-19, as being in improper dependent form for failing to further limit the subject matter of a previous claim. Applicants respectfully submit that objections to claims 6, 7, 13, and 14 are moot in view of cancellation of claims 6, 7, 13, and 14.

As to claims 4, 5, 11, 12, 18 and 19, per the Office's request, Applicants have amended the claims to further limit the height adjustment slot defined in the corresponding claims 2, 9, and 16. Accordingly, Applicants request that the claim objections be withdrawn.

Claim Rejections under 35 U.S.C. § 112, first paragraph:

The Office has rejected claims 1-19 under 35 U.S.C. § 112, first paragraph, asserting that the disclosure is not enabling. Specifically, the Office states that the interconnectivity and interconnecting elements critical or essential to practice the invention and not included in the claims is not enabled by the specification. The Office sets forth certain structural elements the Office claims to be missing in the claim.

Applicants respectfully traverse Office's assertion, as Applicants believe that considering the entire disclosure, the disclosure is enabling, as the structural elements cited by the Office are merely preferred embodiments, and as such, are not to be considered critical. However, to expedite prosecution, Applicants have amended the claims so as to better define the invention. For instance, independent claim 1 has been amended to define that the shaft is configured to engage the wafer backside plate. Claims 1, 8, and 15 have further been amended to recite that the wafer backside plate is in an up position when the backside plate and the shaft are spinning and that the wafer backside plate is in a down position when the backside plate and the shaft have stopped spinning. As such, one having ordinary skill in the art would appreciate that the automatic slide of the wafer backside palate is due to the centrifugal force caused by the spinning of the shaft and the wafer backside plate.

The Office has rejected claims 8 and 15 as being unclear whether it is the shaft that is being received and engaged by the cylindrical edge lip or it is the wafer backside plate that is being received and engaged by the shaft. As disclosed in the specification and as also claimed in claims 2, 9, and 16, the height adjustment slot of the shaft is configured to engage

the wafer backside plate. Thus, it is respectfully submitted that Applicants have correctly defined that the shaft is configured to receive and engage the wafer backside plate. Accordingly, the 35 U.S.C. § 112, first paragraph rejection of claims 1-5, 8-12, and 15-19 should be withdrawn.

Claim Rejections under 35 U.S.C. § 102(b):

The Office has rejected claims 1-7 under 35 U.S.C. 102(b) as being anticipated by the U.S. Patent No. 4,654,522 to Gornick et al. (hereinafter, Gornick) and U.S. Patent No. 5,974,681 to Gonzalez-Martin et al. (hereinafter, Gonzalez). The Office has also rejected claims 1-19 under 35 U.S.C. 102(b) as being anticipated by the U.S. Patent No. 4,788,994 to Shinbara and U.S. Patent No. 6,292,972 to Ishihara et al. (hereinafter, Ishihara). These rejections are respectfully traversed, as the cited prior art fail to disclose each and every element of the claimed invention, as defined in amended independent claims 1, 8, and 15.

Gornick teaches a miniature position encoder that provides means for transducing angular changes in the shaft position to an electrical output representing the gray code. The encoder of Gornick includes a steel shaft and a metallic logic disk. A drive arm is secured to one end of the shaft and the metallic logic disk is secured to the drive arm by insert molding.

Gornick fails to teach each and every feature of claimed invention, as defined in amended claim 1. For instance, Gornick fails to teach an apparatus for preparing a wafer. Rather, Gornick is directed to a different art, as set forth in the background of Gornick which describes a position encoder as a device to transduce the position of a rotatable shaft to an electrical output by means of a coded output. Gornick further fails to teach a wafer backside plate that includes a cylindrical edge lip that defines a central aperture or a central shaft that is configured to engage the wafer backside plate. In contrast, the metallic logic disk of Gornick is secured to the drive arm by insert molding, which in turn is secured to the shaft. Furthermore, Gornick fails to teach a wafer backside plate; a wafer backside plate that is configured to automatically slide between and up position and a down position; a gap that is defined between the top surface of the wafer backside plate and the wafer; and that the gap is less when the wafer backside plate is in the up position that when the wafer backside plate is in the down position. In fact, as Gornick is directed toward a different art, Gornick is not equipped to process a wafer.

The second cited art, Gonzalez, teaches a spin dryer that includes a perforated spinner plate having a gripper mechanism for holding a work piece by its edges during a spin dry

operation. Gonzalez includes a platform that securely grasps a work piece to be dried. The platform is mounted to a drive shaft and a motor that is used to rotate the shaft and thus the platform. The drive shaft includes a key that mates with a keyway formed in the bottom of the platform. The grippers are mounted on notches around the outer periphery of the platform are used to securely hold the work piece on the platform.

Gonzalez fails to teach each and every feature of the claimed invention, as defined in amended claim 1. By way of example, Gonzalez teaches a platform and not a backside plate. Even if the alleged platform can be considered to be the backside plate, a preposition with which Applicants disagree, the platform of Gonzales does not automatically slide between an up position and a down position. Rather, the platform of Gonzalez is used to securely hold the wafer to be processed in place. As can be seen, the grippers defined around the platform of Gonzalez are used to hold the work piece on top of the platform so that water droplets are removed from the wafer surfaces. So, as long as the wafer is engaged by the grippers, the size of the gap defined between the platform and the wafer remains constant. That is, the same size gap exists when the platform is spinning and when the platform is not spinning. Specifically, the platform is taught to include five mass reducing apertures or perforation, as shown in Figured 4, 5a, and 5b. As such, the platform of Gonzalez cannot prevent introduction of recontaminants to the wafer backside.

The next cited art, Shinbara, teaches a wafer holding mechanism in which a rotary plate is horizontally mounted on an upper end of a hollow rotary shaft. A plurality of chuck pieces that hold the outer peripheral edge of the wafer is defined on the rotary plate. Furthermore, the rotary plate is fixed to the shaft with a bolt.

Shinbara fails to disclose each and every feature of the claimed invention, as defined in independent claims 1, 8, and 15, as amended. Shinbara fails to disclose a wafer backside plate. Rather, the rotary plate of Shinbara is merely a plate on which the grippers are defined. Furthermore, the rotary plate does not have a cylindrical edge lip. The rotary plate of Shinbara does not slide between an up position and a down position. Rather, the rotary plate is moved up or down as the shaft moves up and down. As such, when the rotary plate and the shaft are defined outside the housing, the alleged up position, the shaft and the rotary plate are not spinning. Instead, the chuck pieces have been moved outside the housing for an exchange of wafer. Therefore, the rotary plate and thus the shaft do not spin in the alleged up position. In fact, the opposite seems to occur. That is, the rotary plate and the shaft can spin when the rotary plate and the shaft are in the down position.

Furthermore, again, the gap existing between the rotary plate and the wafer remains constant irrespective of the fact the rotary plate and the shaft are in the up position or in the down position. Additionally, in contrast to the claimed invention, wherein the shaft is configured to engage (independent claim 1) or receive and engage (independent claims 8 and 15), the rotary plate of Shinbara is bolted to the shaft.

Lastly, Ishihara teaches a scrub washing apparatus that includes a spin chuck that includes a mounting table and a plurality of mechanical chucks for holding the wafer. The wafer is held and rotated by the spin chuck, as the wafer is placed on the mounting table.

Ishihara fails to teach each and every feature of independent claims 1, 8, and 15, as amended. For instance, Ishihara does not teach a chuck having a plurality of grippers, as defined in independent claims 8 and 15. In fact, the mechanical chucks of Ishihara are not shown. Furthermore, the mounting table of Ishihara is not shown to include an aperture or a cylindrical edge lip. In fact, in contrast to claim 15, in which the wafer backside plate mirrors the wafer being held, the mounting table of Ishihara is shown to be smaller than the wafer. Additionally, in contrast to the claimed invention wherein the wafer backside plate is configured to slide between an up position and a down position, the wafer backside plate of Ishihara is not disclosed to slide between an up position and a down position.

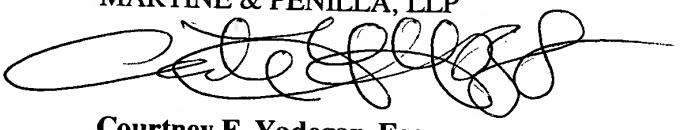
Furthermore, as can be seen, a gap does not exist between the mounting table and the wafer, since the wafer is placed on the mounting table and is configured to be spun as the chuck rotates. As a gap does not exist, Ishihara does not disclose a gap that is less when the wafer backside plate is in the up position.

Thus, amended independent claims 1, 8, and 12 are respectfully submitted to be patentable under 35 U.S.C. § 102(b) over the cited prior art. In a like manner, dependent claims 2-5, 9-12, and 16-19, each of which directly or indirectly depends from the respective independent claim 1, 8, and 12 are submitted to be patentable 35 U.S.C. § 102() over the cited prior art for at least the reasons set forth above regarding independent claim 1, 8, and 15, respectively. As such, the Applicants respectfully request that the § 102(b) rejections be withdrawn.

In view of the foregoing, the Applicants respectfully submit that all of the pending claims are in condition for allowance. Accordingly, a Notice of Allowance is respectfully requested. If the Examiner has any questions concerning the present Amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6903. If any additional

fees are due in connection with filing this Amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. LAM2P216). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
MARTINE & PENILLA, LLP



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Smith et al.

Application No: 09/747,660

Filed: December 22, 2000

For: WAFER BACKSIDE PLATE FOR USE IN A SPIN, RINSE, AND DRY MODULE AND METHODS FOR MAKING AND IMPLEMENTING THE SAME

Group Art Unit: 1746

Examiner: G. Winter

Atty. Docket No: LAM2P216

Date: March 6, 2003

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail addressed to: Commissioner for Patents, Washington, DC 20231 on March 6, 2003.

Signed: _____
Courtney F. Yadegar

MARKED-UP SPECIFICATION AND CLAIMS

IN THE SPECIFICATION

Page 33, paragraph 3, lines 22-24 and page 34, paragraph 1, lines 1-6:

Having the description of the chuck assembly in mind, Figure 14 is a cross-sectional view of a chuck assembly 1400 in a closed position and having a backside plate in a down position, in accordance with one embodiment of the present invention. As shown, the chuck assembly includes a chuck top plate 2110 defined on top of the chuck body 102. The chuck assembly 1400 includes a plurality of linkage arms 122, grippers 112, linkage pins 122a, and rotation pins 120, with each of the grippers being coupled to the respective linkage arm via the respective linkage pin 122a, while each of the grippers 112 is coupled to the chuck body 102 via the respective rotation pin 120. As shown, grippers 112 are configured to generally [unction] function as substrate holders.

Page 38, paragraph 2, lines 19-24 to page 39, paragraph 1, line 1:

However, as the RPMs of the chuck assembly decreases, the backside pin 2129 of the wafer backside plate 2114 traverses back through the height adjusting slot 2128a from the height B to the height A so as to assume the down position. Having a wafer backside plate 2114 configured to be [move] moved from the up position to a down position is beneficial as the gap between the wafer backside plate 2114 and the wafer 118 allows the end effector to approach the wafer process plane so as to load/unload a processed wafer.

IN THE CLAIMS

1. (Amended) An apparatus for preparing a wafer, comprising:

a wafer backside plate having a top surface configured to include a cylindrical edge lip that defines a central aperture;

a central shaft configured to fit within the central aperture and configured to engage the wafer backside plate, the wafer backside plate being configured to automatically slide between an up position when the wafer backside plate and the shaft are spinning during rotational wafer processing and a down position when the wafer backside plate and the shaft have stopped spinning once not in rotational wafer processing, wherein a gap defined between the top surface of the wafer backside plate and the wafer is less when in the up position than when in the down position.

4. (Amended) An apparatus of claim 3, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [a] the lower position in the height adjustment slot to [an] the upper position in the height adjustment slot during rotational wafer processing.

5. (Amended) An apparatus of claim 3, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [an] the upper position in the height adjustment slot to [a] the lower position in the height adjustment slot when completing rotational wafer processing.

8. (Amended) An apparatus for preparing a wafer, comprising:

a chuck having a plurality of grippers for holding the wafer;

a wafer backside plate having a top surface, the wafer backside plate including a cylindrical edge lip that defines a central aperture;

a shaft connected to a central portion of the chuck and configured to receive and engage the [central aperture] cylindrical edge lip of the backside plate, the wafer backside plate being configured to automatically slide between an up position when the chuck, the wafer backside plate, and the shaft are spinning during rotational wafer processing and a down position when the chuck, the wafer backside plate, and the shaft stop spinning upon completing rotational wafer processing, wherein a gap defined between the top surface of the wafer backside plate and the wafer is less when in the up position than when in the down position.

11. (Amended) An apparatus of claim 9, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [a] the lower position in the height adjustment slot to [an] the upper position in the height adjustment slot during rotational wafer processing.

12. (Amended) An apparatus of claim 9, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [an] the upper position in the height adjustment slot to [a] the lower position in the height adjustment slot when completing rotational wafer processing.

15. (Amended) An apparatus for spinning, rinsing and drying a wafer, comprising:

a chuck having a plurality of wafer holders for holding the wafer during the spinning, rinsing and drying;

a wafer backside plate having a disk-like top surface that mirrors the wafer being held by the holders above the wafer backside plate, the wafer backside plate including a cylindrical edge lip at a center, the edge lip having an inner surface that defines a central aperture;

a shaft connected to a central portion of the chuck and configured to receive and engage the [central aperture] the inner surface of the edge lip of the backside plate, the wafer backside plate being configured to automatically slide between an up position when the chuck, the wafer backside plate, and the shaft are spinning during rotational wafer processing and a down position when the chuck, the wafer backside plate, and the shaft have stopped spinning upon completing rotational wafer processing, wherein a gap defined between the

top surface of the wafer backside plate and the wafer is less when in the up position than when in the down position.

18. (Amended) An apparatus of claim 16, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [a] the lower position in the height adjustment slot to [an] the upper position in the height adjustment slot during rotational wafer processing.

19. (Amended) An apparatus of claim 16, wherein the height adjustment slot includes,

a lower position; and

an upper position,

wherein the pin slides from [an] the upper position in the height adjustment slot to [a] the lower position in the height adjustment slot when completing rotational wafer processing.